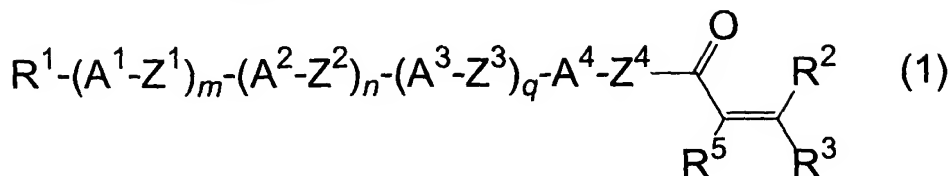


What is claimed is:

1. A compound of formula (1):



wherein R^1 represents hydrogen, halogen, $-\text{CN}$, $-\text{CF}_3$, $-\text{CF}_2\text{H}$, $-\text{CFH}_2$, $-\text{OCF}_3$, $-\text{OCF}_2\text{H}$, $-\text{N}=\text{C}=\text{O}$, $-\text{N}=\text{C}=\text{S}$, or alkyl having from 1 to 20 carbon atoms, and any $-\text{CH}_2-$ of the alkyl may be substituted with $-\text{O}-$, $-\text{S}-$, $-\text{CO}-$, $-\text{COO}-$, $-\text{OCO}-$, $-\text{CH}=\text{CH}-$, $-\text{CF}=\text{CF}-$ or $-\text{C}\equiv\text{C}-$, and any hydrogen thereof may be substituted with halogen or $-\text{CN}$; R^2 , R^3 and R^5 each independently represent hydrogen or alkyl having from 1 to 3 carbon atoms; A^1 , A^2 , A^3 and A^4 each independently represent 1,4-cyclohexylene, 1,4-cyclohexenylene, 1,4-phenylene, naphthalene-2,6-diyl, tetrahydronaphthalene-2,6-diyl, fluorene-2,7-diyl, bicyclo[2.2.2]octane-1,4-diyl or bicyclo[3.1.0]hexane-3,6-diyl, and in these rings, any $-\text{CH}_2-$ may be substituted with $-\text{O}-$, and any $-\text{CH}=\text{CH}-$ may be substituted with $-\text{N}=\text{N}-$, and in these rings, any hydrogen may be substituted with halogen or alkyl having from 1 to 5 carbon atoms; Z^1 , Z^2 and Z^3 each independently represent a single bond, $-(\text{CH}_2)_a-$, $-\text{O}(\text{CH}_2)_a-$, $-(\text{CH}_2)_a\text{O}-$, $-\text{O}(\text{CH}_2)_a\text{O}-$, $-\text{CH}=\text{CH}-$, $-\text{C}\equiv\text{C}-$, $-\text{COO}-$, $-\text{OCO}-$, $-(\text{CF}_2)_2-$, $-\text{C}\equiv\text{C}-\text{COO}-$, $-\text{OCO}-\text{C}\equiv\text{C}-$, $-\text{CH}=\text{CH}-(\text{CH}_2)_2-$, $-(\text{CH}_2)_2-\text{CH}=\text{CH}-$, $-\text{CF}=\text{CF}-$, $-\text{C}\equiv\text{C}-\text{HC}=\text{CH}-$, $-\text{CH}=\text{CH}-\text{C}\equiv\text{C}-$, $-\text{OCF}_2-$, or $-\text{CF}_2\text{O}-$, and a indicates an integer of from 1 to 20; Z^4 represents a single bond or α,ω -alkylene having from 1 to 4 carbon atoms, and any $-\text{CH}_2-$ of the alkylene may be substituted with $-\text{O}-$, $-\text{S}-$, $-\text{COO}-$ or $-\text{OCO}-$; m , n and q each independently indicate 0, 1 or 2.

2. A compound as claimed in claim 1, in which R⁵ in formula (1) is hydrogen.

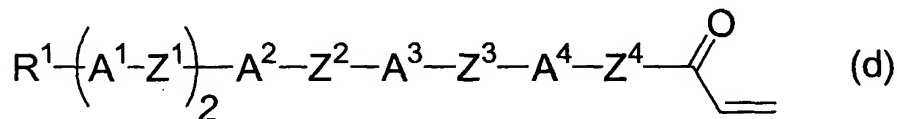
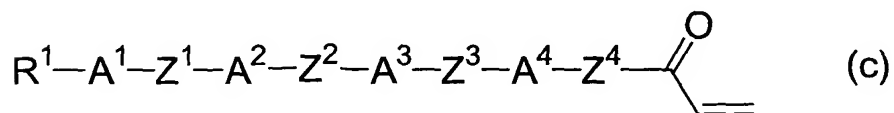
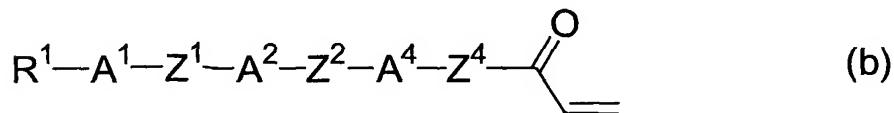
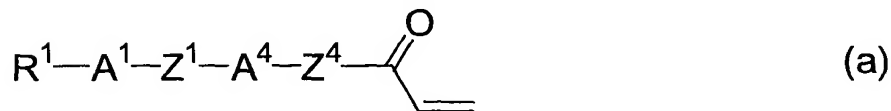
3. A compound as claimed in claim 2, in which R² and R³ in formula (1) in claim 1 are hydrogen.

5 4. A compound as claimed in claim 3, in which A¹, A², A³ and A⁴ in formula (1) in claim 1 are independently any of 1,4-cyclohexylene or 1,4-phenylene, and any hydrogen in these rings may be substituted with halogen.

10 5. A compound as claimed in claim 3, in which A¹, A², A³ and A⁴ in formula (1) in claim 1 are independently any of 1,4-cyclohexylene or 1,4-phenylene, and any hydrogen in these rings may be substituted with halogen; and Z¹, Z² and Z³ are independently any of a single bond, -(CH₂)_a-, -O(CH₂)_a-, -(CH₂)_aO-, -O(CH₂)_aO-, -CH=CH-, -C≡C-, -COO-, -OCO-, -OCF₂- or -CF₂O-.

15 6. A compound as claimed in claim 5, in which Z⁴ in formula (1) in claim 1 is a single bond.

7. Any one compound of formulae (a) to (d):



wherein R¹ represents hydrogen, halogen, -CN, -CF₃, -CF₂H, -CFH₂, -OCF₃, -OCF₂H, -N=C=O, -N=C=S, or alkyl having from 1 to 20 carbon atoms, and any -CH₂- of the alkyl may be substituted with -O-, -S-, -CO-, -COO-, -OCO-, -CH=CH-, -CF=CF- or -C≡C-, and any hydrogen thereof may be substituted with halogen or -CN;
 5 A¹, A², A³ and A⁴ each independently represent 1,4-cyclohexylene, 1,4-cyclohexenylene, 1,4-phenylene, naphthalene-2,6-diyl, tetrahydronaphthalene-2,6-diyl, fluorene-2,7-diyl, bicyclo[2.2.2]octane-1,4-diyl or bicyclo[3.1.0]hexane-3,6-
 10 diyl, and in these rings, any -CH₂- may be substituted with -O-, and any -CH= may be substituted with -N=, and in these rings, any hydrogen may be substituted with halogen or alkyl having from 1 to 5 carbon atoms; Z¹, Z² and Z³ each independently represent a single bond, -(CH₂)_a-, -O(CH₂)_a-, -(CH₂)_aO-, -
 15 O(CH₂)_aO-, -CH=CH-, -C≡C-, -COO-, -OCO-, -(CF₂)₂-, -C≡C-COO-, -OCO-C≡C-, -CH=CH-(CH₂)₂-, -(CH₂)₂-CH=CH-, -CF=CF-, -C≡C-HC=CH-, -CH=CH-C≡C-, -OCF₂- or -CF₂O-, and a indicates an integer of from 1 to 20; Z⁴ represents a single bond or α,ω-alkylene having from 1 to 4 carbon atoms, and any -CH₂- of the alkylene may be
 20 substituted with -O-, -S-, -COO- or -OCO-.

8. A compound as claimed in claim 7, in which R¹ in formulae (a) to (d) is hydrogen, halogen, -CN, -CF₃, -CF₂H, -CFH₂, -OCF₃, -OCF₂H, alkyl having from 1 to 10 carbon atoms, alkoxy having from 1 to 10 carbon atoms, alkoxyalkyl having from 2 to 10 carbon
 25 atoms, or alkenyl having from 2 to 10 carbon atoms; A¹, A², A³ and A⁴ are independently any of 1,4-cyclohexylene or 1,4-phenylene, and in these rings, any hydrogen may be substituted with halogen; Z¹, Z² and Z³ are independently any of a single

bond, $-(CH_2)_2-$, $-(CH_2)_4-$, $-OCH_2-$, $-O(CH_2)_3-$, $-CH_2O-$, $-(CH_2)_3O-$,
 $-O(CH_2)_2O-$, $-CH=CH-$, $-C\equiv C-$, $-COO-$, $-OCO-$, $-(CF_2)_2-$, $-CF=CF-$,
 $-OCF_2-$ or $-CF_2O-$; Z^4 is a single bond.

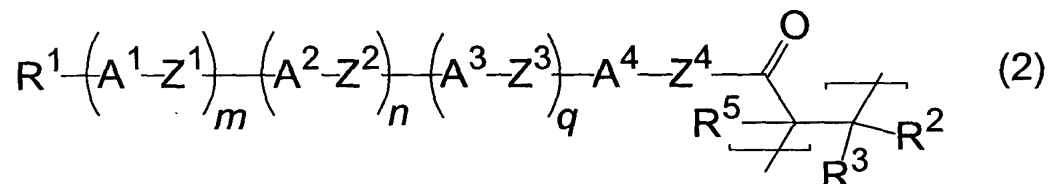
9. A liquid-crystal composition containing at least two
 5 polymerizable compounds, in which at least one polymerizable
 compound is the compound of any one of claims 1 to 8.

10. A liquid-crystal composition as claimed in claim 9,
 in which all the polymerizable compounds are the compounds of
 any one of claims 1 to 8.

10 11. A liquid-crystal composition as claimed in claim 9,
 which contains at least one compound of any one of claims 1 to
 8 and at least one polymerizable compound except the compound.

12. A liquid-crystal composition as claimed in claim 9,
 which additionally contains an optically-active compound.

15 13. A polymer having a constitutional unit of formula (2):



wherein R^1 represents hydrogen, halogen, $-\text{CN}$, $-\text{CF}_3$, $-\text{CF}_2\text{H}$, $-\text{CFH}_2$, $-\text{OCF}_3$, $-\text{OCF}_2\text{H}$, $-\text{N}=\text{C}=\text{O}$, $-\text{N}=\text{C}=\text{S}$, or alkyl having from 1 to
 20 carbon atoms, and any $-\text{CH}_2-$ of the alkyl may be substituted
 20 with $-\text{O}-$, $-\text{S}-$, $-\text{CO}-$, $-\text{COO}-$, $-\text{OCO}-$, $-\text{CH}=\text{CH}-$, $-\text{CF}=\text{CF}-$ or $-\text{C}\equiv\text{C}-$,
 and any hydrogen thereof may be substituted with halogen or $-\text{CN}$;
 R^2 , R^3 and R^5 each independently represent hydrogen or an alkyl
 having from 1 to 3 carbon atoms; A^1 , A^2 , A^3 and A^4 each
 independently represent 1,4-cyclohexylene, 1,4-
 25 cyclohexenylene, 1,4-phenylene, naphthalene-2,6-diyl,
 tetrahydronaphthalene-2,6-diyl, fluorene-2,7-diyl,

bicyclo[2.2.2]octane-1,4-diyl or bicyclo[3.1.0]hexane-3,6-diyl, and in these rings, any -CH₂- may be substituted with -O-, and any -CH= may be substituted with -N=, and in these rings, any hydrogen may be substituted with halogen or alkyl having
 5 from 1 to 5 carbon atoms; Z¹, Z² and Z³ each independently represent a single bond, -(CH₂)_a-, -O(CH₂)_a-, -(CH₂)_aO-, -O(CH₂)_aO-, -CH=CH-, -C≡C-, -COO-, -OCO-, -(CF₂)₂-, -C≡C-COO-, -OCO-C≡C-, -CH=CH-(CH₂)₂-, -(CH₂)₂-CH=CH-, -CF=CF-, -C≡C-HC=CH-, -CH=CH-C≡C-, -OCF₂-, or -CF₂O-, and a indicates an integer of
 10 from 1 to 20; Z⁴ represents a single bond or α,ω-alkylene having from 1 to 4 carbon atoms, and any -CH₂- of the alkylene may be substituted with -O-, -S-, -COO- or -OCO-; and m, n and q each independently indicate 0, 1 or 2.

14. A polymer as claimed in claim 13, in which R⁵ in formula
 15 (2) is hydrogen.

15. A polymer as claimed in claim 14, in which R² and R³ in formula (2) in claim 13 are hydrogen.

16. A polymer as claimed in claim 15, in which A¹, A², A³ and A⁴ in formula (2) in claim 13 are independently any of
 20 1,4-cyclohexylene or 1,4-phenylene, and any hydrogen in these rings may be substituted with halogen.

17. A polymer as claimed in claim 15, in which A¹, A², A³ and A⁴ in formula (2) in claim 13 are independently any of 1,4-cyclohexylene or 1,4-phenylene, and any hydrogen in these
 25 rings may be substituted with halogen; and Z¹, Z² and Z³ are independently any of a single bond, -(CH₂)_a-, -O(CH₂)_a-, -(CH₂)_aO-, -O(CH₂)_aO-, -CH=CH-, -C≡C-, -COO-, -OCO-, -OCF₂-, or -CF₂O-.

18. A polymer as claimed in claim 17, in which Z⁴ in formula

(2) in claim 13 is a single bond.

19. A polymer as claimed in claim 13, in which R^1 in formula (2) is hydrogen, halogen, $-CN$, $-CF_3$, $-CF_2H$, $-CFH_2$, $-OCF_3$, $-OCF_2H$, alkyl having from 1 to 10 carbon atoms, alkoxy having from 1
5 to 10 carbon atoms, alkoxyalkyl having from 2 to 10 carbon atoms, or alkenyl having from 2 to 10 carbon atoms; R^2 , R^3 and R^5 are hydrogen; A^1 , A^2 , A^3 and A^4 are independently any of 1,4-cyclohexylene or 1,4-phenylene, and in these rings, any hydrogen may be substituted with halogen; Z^1 , Z^2 and Z^3 are
10 independently any of a single bond, $-(CH_2)_2-$, $-(CH_2)_4-$, $-OCH_2-$, $-O(CH_2)_3-$, $-CH_2O-$, $-(CH_2)_3O-$, $-O(CH_2)_2O-$, $-CH=CH-$, $-C\equiv C-$, $-COO-$, $-OCO-$, $-(CF_2)_2-$, $-CF=CF-$, $-OCF_2-$ or $-CF_2O-$; Z^4 is a single bond.

20. A polymer as claimed in claim 13, which is obtained through homopolymerization of one compound of any one of claims
15 1 to 8.

21. A polymer as claimed in claim 13, which is obtained from the liquid-crystal composition of any one of claims 9 to 12.

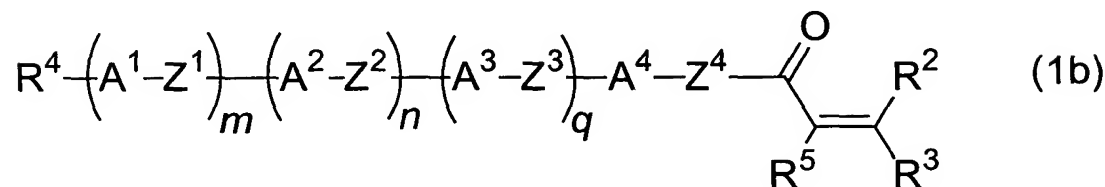
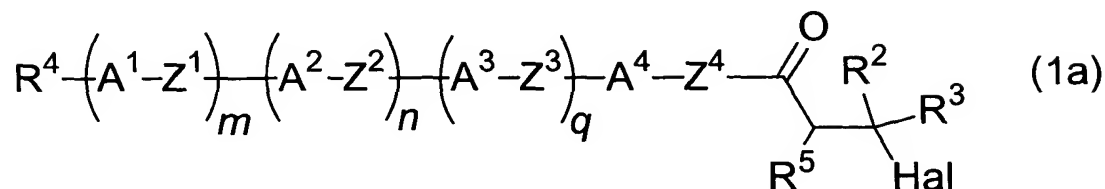
22. An optically-anisotropic material of the polymer of
20 any one of claims 13 to 21.

23. A liquid-crystal display device, which contains the polymer of any one of claims 13 to 21.

24. A liquid-crystal display device, which contains the optically-anisotropic material of claim 22.

25. A method for producing a vinyl ketone compound of
25 formula (1b), which comprises reacting one molar equivalent of a compound of formula (1a) with from 1 to 10 molar equivalents of a Lewis acid at -70°C to 200°C , followed by

dehydrohalogenating the resulting compound:



wherein R^4 represents hydrogen, halogen, $-OH$, $-CN$, $-CF_3$, $-CF_2H$, $-CFH_2$, $-OCF_3$, $-OCF_2H$, $-N=C=O$, $-N=C=S$, or alkyl having from 1 to 20 carbon atoms, and any $-CH_2-$ of the alkyl may be substituted with $-O-$, $-S-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-CF=CF-$ or $-C\equiv C-$, and any hydrogen thereof may be substituted with halogen or $-CN$; R^2 , R^3 and R^5 each independently represent hydrogen or an alkyl having from 1 to 3 carbon atoms; A^1 , A^2 , A^3 and A^4 each independently represent 1,4-cyclohexylene, 1,4-cyclohexenylene, 1,4-phenylene, naphthalene-2,6-diyl, tetrahydronaphthalene-2,6-diyl, fluorene-2,7-diyl, bicyclo[2.2.2]octane-1,4-diyl or bicyclo[3.1.0]hexane-3,6-diyl, and in these rings, any $-CH_2-$ may be substituted with $-O-$, and any $-CH=$ may be substituted with $-N=$, and in these rings, any hydrogen may be substituted with halogen or alkyl having from 1 to 5 carbon atoms; Z^1 , Z^2 and Z^3 each independently represent a single bond, $-(CH_2)_a-$, $-O(CH_2)_a-$, $-(CH_2)_aO-$, $O(CH_2)_aO-$, $-CH=CH-$, $-C\equiv C-$, $-COO-$, $-OCO-$, $-(CF_2)_2-$, $-C\equiv C-COO-$, $-OCO-C\equiv C-$, $-CH=CH-(CH_2)_2-$, $-(CH_2)_2-CH=CH-$, $-CF=CF-$, $-C\equiv C-HC=CH-$, $-CH=CH-C\equiv C-$, $-OCF_2-$ or $-CF_2O-$, and a indicates an integer of from 1 to 20; Z^4 represents a single bond or α,ω -alkylene having

from 1 to 4 carbon atoms, and any $\text{-CH}_2\text{-}$ of the alkylene may be substituted with -O- , -S- , -COO- or -OCO- ; m, n and q each independently indicate 0, 1 or 2; Hal represents chlorine, bromine or iodine.